



**PATENT APPLICATION**  
Atty Docket: 678-1132 (P10748)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

APPLICANT(S): Sang-Hyuck JUNG                      GROUP ART UNIT: 2688  
APPLICATION NO.: 10/725,785                      EXAMINER: STEIN, Julie E.  
FILING DATE: December 2, 2003  
FOR:              **MOBILE COMMUNICATION DEVICE WITH SLIDE PORTION**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**37 C.F.R. § 1.131 DECLARATION OF PRIOR INVENTION**  
**MADE IN THE REPUBLIC OF KOREA**  
**TO OVERCOME CITED PATENT PUBLICATION**

Sir:

I, Sang-Hyuck JUNG, hereby declare that:

1. I am an inventor for the above-referenced patent application, which claims priority to application number 2003-4309 that was filed with the Korean Intellectual Property Office on January 22, 2003.
2. This declaration is submitted to establish reduction to practice of the invention of the above-referenced patent application in the Republic of Korea prior to October 25, 2002, which is the effective filing date of U.S. Patent Publication No. 2003/0171133 A1, which was published to *Mizuta et al.*, and which was cited by the Examiner in the above-referenced patent application.

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3. This declaration is submitted prior to issuance of a final rejection in the above-referenced patent application.
4. To establish the date of reduction to practice of the invention of the above-referenced patent application, the following documents are attached hereto and are submitted as evidence:
  - a. Exhibit A is an invention disclosure document;
  - b. Exhibit B is a certified translation of Exhibit A; and
  - c. Exhibit C is a certified translation of application number 2003-4309 that was filed with the Korean Industrial Property Office on January 22, 2003.
5. The invention disclosure document provided as Exhibit A hereto was completed at least before October 25, 2002, which is earlier than the effective filing date *Mizuta et al.*.
6. The invention disclosure document and the translation thereof, provided as Exhibits A and B, respectively, to this Declaration show a reduction to practice of the invention claimed in the above-referenced patent application.

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7. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statement may jeopardize the validity of the application or any patent issuing thereon.

Date: 6.1, 2006

  
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## CERTIFICATE OF TRANSLATION

As a below named translator, I hereby declare that my residence and citizenship are as stated below next to my name and I hereby certify that I am conversant with both the English and Korean languages and the document enclosed herewith is a true English translation of the Priority Document with respect to the Korean patent application No. 2003-4309 filed on January 22, 2003.

**NAME OF THE TRANSLATOR :** Eun-Ae LEE

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## **[ABSTRACT OF THE DISCLOSURE]**

### **[ABSTRACT]**

- 5 A mobile communication device is provided to make a screen wider by installing a slide cover opening and closing a liquid crystal display by being slid upward or downward. A main body includes a liquid crystal display and guide hole at both sides thereof. A slide cover is provided at a front surface of the liquid crystal display, includes a speaker, and opens and closes the liquid crystal display by being slid upward or downward in a longitudinal direction of the main body. A pop-up module
- 10 penetrates into the guide holes of the main body, is coupled to the slide cover and makes the slide cover movable slidably upward or downward at the front surface of the liquid crystal display. A side grip is provided at the side of the main body, and restrains movement of the pop-up module or releases the pop-up module from a restrained state.

### **[REPRESENTATIVE FIGURE]**

Fig. 1

### **[INDEX]**

- 15 Mobile Communication Device, Main Body, Slid Cover, Pop Up Module, Side Grip

**[SPECIFICATION]**

**[TITLE OF THE INVENTION]**

MOBILE COMMUNICATION DEVICE

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**[BRIEF DESCRIPTION OF THE DRAWINGS]**

Fig. 1 is an exploded perspective view of a front surface of a mobile communication device in accordance with an embodiment of the present invention;

10 Fig. 2 is an exploded perspective view of a rear surface of the mobile communication device in accordance with the embodiment of the present invention;

Fig. 3 is a front view of the mobile communication device prior to its use in accordance with the embodiment of the present invention;

Fig. 4 is an enlarged view of a portion "A" of Fig. 3;

15 Fig. 5 is an enlarged view of the portion "A" of Fig. 3 during use of the mobile communication device;

Fig. 6 is a front view of the mobile communication device after its use in accordance with the embodiment of the present invention;

20 Fig. 7 is a perspective view of a side grip of the mobile communication device in accordance with the embodiment of the present invention;

Fig. 8 is a front view of the inside of the side grip of the mobile communication device in accordance with the embodiment of the present invention;

Fig. 9 is an enlarged view of a portion "B" of Fig. 8;

25 Fig. 10 is a front view of the side grip of the mobile communication device during use in accordance with the embodiment of the present invention; and

Fig. 11 is an enlarged view of a portion "C" of Fig. 10.

**[DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT]**

**[OBJECT OF THE INVENTION]**

30 **[RELATED FIELD AND PRIOR ART OF THE INVENTION]**

The present invention relates to a mobile communication device, and more particularly to a mobile communication device comprising a slide cover sliding upward or downward according to use of the mobile communication device so as to

expose the entire or a portion of a liquid crystal display.

Conventionally, mobile communication devices refer to portable units for communicating with a counterpart via wireless communication. Such mobile communication devices include an HHP (Hand Held Phone), a CT-2 cellular phone, a digital phone, a PCS phone, a PDA (Personal Digital Assistant), etc. The mobile communication devices are divided into several types according to their external shapes. For example, the mobile terminals may be divided into bar-type terminals, flip-type terminals, and folder-type terminals, according to their external shapes. The bar-type mobile terminal comprises a bar-type housing. The flip-type mobile terminal comprises a bar-type housing, and a flip or a cover rotatably connected to the housing by a hinge unit. The folder-type mobile terminal comprises a bar-type housing, and a folder rotatably connected to the housing by a hinge unit, thereby being folded or unfolded. Further, the mobile terminals may be divided into neck wearable-type terminals, wrist wearable-type terminals, etc., according to their wearing locations. The neck wearable-type terminal is hung on a user's neck using a string, and the wrist wearable-type terminal is held on a user's wrist. Moreover, the mobile terminals may be divided into rotation-type terminals and sliding-type terminals according to their opening or closing manners. The rotation-type terminal is opened and closed by a relative rotational motion of its two housings facing each other and rotatably connected to each other. The sliding-type terminal is opened and closed by a longitudinal sliding motion of one housing of its two housings. Those skilled in the art will appreciate the designs of the aforementioned various mobile terminals. Each of the above conventional mobile terminals essentially comprises an antenna unit, data input and output units, and data transmission and reception units. Of course, a keypad, through which data is inputted into the terminal by pressing with the fingers, is mainly used as the data input unit. Otherwise, a touch pad or a touch screen may be used as the data input unit. A LCD (liquid crystal display) is mainly used as the data output unit so as to display data. The keypad includes an array of a plurality of keys. Herein, the keys includes a send (SND) key serving as a communication start button, a delete key, a clearance (CLR) key, numeral keys, character keys, an end (END) key, function (FCN) keys, a power-supply (PWR) key serving to perform switching on/off of power supply, etc. The keys are arranged at proper positions on an upper surface of a housing of the mobile terminal, in a total number of approximately 15 to 20. Since the keys are exposed from the upper surface of the housing, desired data are inputted into the

terminal by a user's pressing action. In case of the bar-type and flip-type mobile terminals, a bar-type single housing is prepared. Then, a liquid crystal display, a keypad, a microphone, and a speaker are provided on a front surface of the housing, and an antenna unit is provided on a rear surface of the housing. Particularly, in the flip-type mobile terminal, the liquid crystal display is exposed on the front surface of the housing so that transmitted and received data are displayed thereon, and the keypad including a plurality of keys for inputting data is installed below the liquid crystal display. The microphone for transmitting a user's voice to a counterpart is installed below the keypad. Further, a flip is rotatably connected to a lower end of the housing of the terminal by a hinge unit so as to protect the keypad and concentrate the user's voice toward microphone.

However, since the liquid crystal display of the conventional mobile terminal has a narrow screen, it has a limitation in that it is unable to display a long message on the screen of the liquid crystal display. Further, since it is difficult to display a long document downloaded via the Internet on the screen of the liquid crystal display, the liquid crystal display of the conventional mobile terminal cannot perform various display functions. Moreover, since the liquid crystal displays of the conventional bar-type and flip-type mobile terminals are exposed to the outside, even when light external impact is applied to the liquid crystal displays, the surfaces of the liquid crystal displays are damaged and the liquid crystal displays must be replaced with new ones.

## **[SUBSTANTIAL MATTER OF THE INVENTION]**

Therefore, the present invention has been made in view of the above problems, and it is an object of the present invention to provide a mobile communication device comprising a slide cover longitudinally sliding upward or downward according to use of the mobile communication device so as to expose the entire or a portion of a liquid crystal display, thereby widening the range of a screen of the liquid crystal display and improving its display functions.

It is a further object of the present invention to provide a mobile communication device comprising a slide cover longitudinally sliding upward or downward according



to use of the mobile communication device so as to expose the entire or a portion of a liquid crystal display, thereby protecting the liquid crystal display from external impacts.

5 It is another object of the present invention to provide a mobile communication device comprising a slide cover longitudinally sliding upward or downward, in which a liquid crystal display serves as a main liquid crystal display when the slide cover is completely opened to expose the entire of the liquid crystal display, and serves as a sub liquid crystal display when the slide cover is partially opened to expose a portion of the liquid crystal display.

10 It is yet another object of the present invention to provide a mobile communication device comprising a slide cover longitudinally sliding upward or downward, in which the slide cover is opened from and closed into a main body by a one-touch manner, thereby allowing the slide cover to be easily opened from and closed into the main body.

15 In accordance with the present invention, the above and other objects can be accomplished by the provision of a mobile communication device comprising: a main body including a liquid crystal display and guide holes formed at both sides of the liquid crystal display; a slide cover including a speaker, and being provided on a front surface of the liquid crystal display so as to be slid upward or downward in a longitudinal direction of the main body, thus exposing the entire or a portion of the liquid crystal display; a pop-up module being connected to the slide cover, and being inserted into the guide holes so that the slide cover is slid upward or downward on the front surface of the liquid crystal display of the main body; and a side grip provided at a side surface of the main body so as to fix a position of the pop-up module or release a fixation of the pop-up module.

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## **[CONSTRUCTION AND OPERATION OF THE INVENTION]**

Now, a preferred embodiment of the present invention will be described in detail with reference to the annexed drawings. As shown in Figs. 1 to 11, a mobile communication device comprises a main body 100, a slide cover 200, a pop-up module

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300, and a side grip 400. The main body 100 includes a microphone 101, a key pad 102, a liquid crystal display 103 serving to display data to be transmitted and received, and guide holes 104. Herein, the guide holes 104 are formed at both side edges on the main body 100 so as to receive bars 302 of the pop-up module 300. The slide cover 200 includes a speaker 201. The slide cover 200 is provided on a front surface of the liquid crystal display 103 of the main body 100 so as to be slid upward or downward thereon, thereby exposing the entire or a portion of the liquid crystal display 103. The pop-up module 300 is connected to the slide cover 200, and the bars 302 of the pop-up module 300 are inserted into the guide holes 104 of the main body 100 so that the slide cover 200 is slid upward or downward on the front surface of the liquid crystal display 103 of the main body 100. The side grip 400 is provided at a side surface of the main body 100 so as to fix the position of the pop-up module 300 or release the fixation of the pop-up module 300. Guide grooves 105 are formed at both sides of the liquid crystal display 103 of the main body 100 in a longitudinal direction of the liquid crystal display 103 so as to guide both side surfaces of the slide cover 200. The liquid crystal display 103 of the main body 100 serves as a main liquid crystal display 103b when the slide cover 200 is slid upward on the main body 100 during use of the mobile communication device so as to be completely opened to expose the entire of the liquid crystal display 103. Further, the liquid crystal display 103 of the main body 100 serves as a sub liquid crystal display 103a when the slide cover 200 is slid downward on the main body 100 during nonuse of the mobile communication device so as to be partially opened to expose a portion of the liquid crystal display 103. The slide cover 200 is slid upward on the main body 100 during use of the mobile communication device so as to be completely opened to expose the entire of the liquid crystal display 103, and slid downward on the main body 100 during nonuse of the mobile communication device so as to be partially opened to expose a portion of the liquid crystal display 103. The pop-up module 300 includes a head section 301, at least one bar (herein, two bars 302a and 302b), and a coiled compression spring 303. The head section 301 is connected and fixed to the slide cover 200. The bars 302a and 302b are formed at both ends of the head section 301 so as to be inserted into each of the guide holes 104, and simultaneously to be slid upward or downward along each of the guide holes 104. The coiled compression spring 303 is installed within the bar 302b, and provides elastic force so that the bar 302b is slid upward or downward. The pop-up module 300 is made of metal. The head section 301 includes a connection plate 301a for connecting the bars 302a and 302b to each other. A flexible circuit 304 is installed

within the bar 302a so as to be electrically connected to the speaker 201. The coiled compression spring 303 is installed within the bar 302b, and a locking groove 305 is formed in the lower end of the bar 302b so that a protrusion 401a of a locking plate 401 is locked into or unlocked from the locking groove 305. The side grip 400 includes a locking plate 401, a one-touch button 402, and a locker unit 403. The locking plate 401 is installed within the side grip 400 so as to be locked into or unlocked from the locking groove 305 of the bar 302b. The one-touch button 402 is installed on the external surface of the side grip 400 so that the locking plate 401 is rotated in a clockwise or a counterclockwise direction by pressing the one-touch button 42 by external force, thus separating the locking plate 401 from the locking groove 305. The locker unit 403 is installed at a designated position of the external surface of the side grip 400 adjacent to the one-touch button 402 so as to maintain the locked state of the locking plate 401 into the locking groove 305. Herein, an upper end of the locking plate 401 contacts the one-touch button 402 so that the locking plate 401 is operated simultaneously with the pressing of the one-touch button 402. Further, a lower end of the locking plate 401 is provided with the protrusion 401a locked into the locking groove 305. An incline plane 404 is formed on the protrusion 401a so as to guide the locking groove 305 when the locking groove 305 is slid downward. A hinge unit 406 is installed in the central portion of the locking plate 401a so that the locking plate 401 is rotated in a clockwise or a counterclockwise direction by pressing the one-touch button 402. A plate spring 405 is installed on the rear surface of the protrusion 401a of the locking plate 401, and provides elastic force to the protrusion 401a so that the locking plate 401 is rotated in a clockwise or a counterclockwise direction. The locker unit 403 includes a sliding button 403a and a locking section 403b. The sliding button 403a protrudes from an external surface of the side grip 400 so as to be slid upward or downward by external force. The locking section 403b is formed integrally with the sliding button 403a, and installed within the side grip 400 so as to move together with the upward or downward sliding motion of the sliding button 403a, thereby fixing or releasing the locking plate 401. A contacting protrusion 500 is installed at the upper end of the locking section 403b so as to contact and fix the locking plate 401 according to the upward or downward sliding motion of the locking section 403b. A stopper 600 is installed at a lower end of the locking section 403b so as to stop the upward or downward sliding motion of the locking section 403b. The stopper 600 includes a stopping protrusion 601 and at least one recess 602. The stopping protrusion 601 is connected to the locking section 403b so as to be inserted into the recess 602, thereby

fixing the locking section 403b. The recess 602 is installed in a designated location of the inner wall of the side grip 400 so as to accommodate the stopping protrusion 601.

Hereinafter, with reference to Figs. 1 to 11, an operation of the mobile communication device in accordance with the preferred embodiment of the present invention is described in detail.

As shown in Figs. 1 and 2, the main body 100 of the mobile communication device is provided with the microphone 101, the keypad 102, and the liquid crystal display 103. Further, the slide cover 200 is provided on the front surface of the liquid crystal display 103. The slide cover 200 is slid upward or downward according to use of the mobile communication device, thereby exposing the entire or a portion of the liquid crystal display 103. As shown in Fig. 3, there is provided the mobile communication device, in which the liquid crystal display 103 is partially exposed by the slide cover 200.

As described above, during nonuse of the mobile communication device of the present invention, the liquid crystal display 103 is partially exposed by the slide cover 200, thereby serving as the sub liquid crystal display 103a.

As shown in Figs. 4 and 5, there is provided the pop-up module 300, which is connected to the slide cover 200 and inserted into the guide holes 104 of the main body 100 so that the slide cover 200 is slid upward or downward on the front surface of the liquid crystal display 103 of the main body 100 during telephone call. Further, the side grip 400 is installed at a side surface of the main body 100 so as to fix the position of the pop-up module 300 or release the fixation of the pop-up module 300. When the one-touch button 402 of the side grip 400 is pressed, the pop-up module 300 is released from the side grip 400, and then is slid in an upward direction of the main body 100.

Simultaneously with the upward sliding motion of the pop-up module 300, the slide cover 200 is slid upward.

Herein, since the pop-up module 300 includes the head section 301 connected to the slide cover 200, the head section 301 and the slide cover 200 are slid upward together.

The bars 302a and 302b are formed at both ends of the head section 301 so as to be inserted into each of the guide holes 104. Since the coiled compression spring 303 is installed within the bar 302b, and provides elastic force so that the bar 302b is slid upward or downward, the bars 302a and 302b are slid upward by the elastic force  
5 supplied from the coiled compression spring 303.

Further, the flexible circuit 305 connected to the speaker 201 is installed within the bar 302a. The locking groove 305 is formed in the lower end of the bar 302b.

Since the locking plate 401 is installed within the side grip 400 so as to be locked into or unlocked from the locking groove 305 of the bar 302b, when the  
10 one-touch button 402 is pressed, the locking plate 401 is separated from the locking groove 305 and the bars 302a and 302b are slid upward.

As shown in Fig. 5, the front surface of the one-touch button 402 protrudes from the external surface of the side grip 400, and the rear surface of the one-touch button 402 contacts the upper end of the locking plate 401. Therefore, when the one-touch  
15 button 402 is pressed, the rear surface of the one-touch button 402 pushes the upper end of the locking plate 401, thereby rotating the locking plate 401 centering on the hinge unit 406 so that the upper end of the locking plate 401 moves toward the main body 100.

Herein, the protrusion 401a of the lower end of the locking plate 401 is  
20 separated from the locking groove 305.

Further, the plate spring 405 is installed on the rear surface of the protrusion 401a of the locking plate 401, and provides elastic force so that the locking plate 401 is rotated centering on the hinge unit 406 in a clockwise or counterclockwise direction.

As shown in Fig. 6, the guide grooves 105 are formed at both sides of the liquid  
25 crystal display 103 of the main body 100 in a longitudinal direction of the liquid crystal display 103 so as to guide both side surfaces of the slide cover 200. Therefore, the slide cover 200 is guided upward by the guide grooves 105.

Herein, the slide cover 200 completely opens the front surface of the liquid crystal display 103. In this state, a user uses the mobile communication device of the present invention in order to communicate with a counterpart, and transmitted and received data are displayed on the liquid crystal display 103.

5           As shown in Fig. 3, when the user terminates the telephone call, the slid cover 200 is slid downward by the user. Then, the locking groove 305 formed in the bar 302b is slid downward, and the protrusion 401a of the locking plate 401 within the side grip 400 is locked into the locking groove 305.

10           As shown in Figs. 5 and 7, since the incline plane 404 is formed on the protrusion 401a, the locking groove 305 is guided along the incline plane 404 and the protrusion 401a is inserted into the locking groove 305. Thereby, the bar 302b is fixed to the side grip 400 and simultaneously the slide cover 200 is fixed to the side grip 400.

15           Herein, as shown in Figs. 7 to 9, the locker unit 403 is installed at a designated position of the external surface of the side grip 400 adjacent to the one-touch button 402 so as to maintain the locked state of the protrusion 401a of the locking plate 401 into the locking groove 305. Therefore, the protrusion 401a of the locking plate 401 is locked into the locking groove 305, and its locked state is maintained by the locker unit 403.

20           As shown in Figs. 10 and 11, the sliding button 403a protrudes from the external surface of the side grip 400 so as to be slid upward or downward by external force. Herein, the sliding button 403a is slid downward.

25           Further, the locking section 403b is formed integrally with the sliding button 403a and installed within the side grip 400 so as to move together with the upward or downward sliding motion of the sliding button 403a, thereby fixing or releasing the locking plate 401. Therefore, when the sliding button 403a is slid downward, the locking section 403b also moves downward, thereby fixing the locking plate 401.

          As shown in Fig. 11, the contacting protrusion 500 is installed at the upper end of the locking section 403b so as to contact and simultaneously fix the locking plate

401. Therefore, when the locking section 403b moves downward, the contacting protrusion 500 also moves downward and then contacts the locking plate 401, thereby fixing the locking plate 401.

5 Further, as shown in Fig. 11, the stopper 600 is installed at the lower end of the locking section 403b so as to stop the upward or downward sliding motion of the locking section 403b. Therefore, the downward-moved locking section 403b is fixed by the stopper 600.

10 Herein, the stopper 600 includes the stopping protrusion 601 connected to the locking section 403b, and at least one recess 602 for accommodating the stopping protrusion 601 and thus fixing the locking section 403b. Therefore, the stopping protrusion 601 is inserted into the recess 602, thereby fixing the locking section 403b.

15 Further, as shown in Figs. 8 and 9, when the sliding button 403a is slid upward, the locking section 403b also moves upward and the locking plate 401 is released from the locker unit 403. In this state, when the one-touch button 402 is pressed, the slide cover 200 is slid upward again.

As apparent from the above description, the present invention provides a mobile communication device comprising a slide cover, which is slid upward or downward on a liquid crystal display of a main body, thereby widening a screen of the liquid crystal display and improving its display functions and the utility of the product.

20 Although only one embodiment of the present invention has been described in detail, those skilled in the art will appreciate that various modifications, additions, and substitutions to the specific elements are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

25 For example, the present invention is not limited to a bar-type terminal, but may be applied to any type of mobile terminals.

#### **[EFFECTS OF THE INVENTION]**

As apparent from the above description, the present invention provides a mobile

communication device comprising a slide cover being longitudinally slid upward or downward to be opened and closed, thereby widening the range of a screen of the liquid crystal display and improving its display functions; protecting the liquid crystal display from external impacts. The liquid crystal display serves as a main liquid crystal display when the slide cover is completely opened to expose the entire of the liquid crystal display during using the product, and serves as a sub liquid crystal display when the slide cover is partially opened to expose a portion of the liquid crystal display during not using the product, thereby improving the utility of the product, and easily using the opening and closing of the slide cover in which the slide cover is opened from and closed into a main body by a one-touch manner.



## [PATENT CLAIMS]

1. A mobile communication device comprising:
  - a main body including a liquid crystal display and guide holes formed at both sides of the liquid crystal display;
  - 5 a slide cover including a speaker, and being provided on a front surface of the liquid crystal display so as to be slid upward or downward in a longitudinal direction of the main body, thus exposing the entire or a portion of the liquid crystal display;
  - a pop-up module being connected to the slide cover, and being inserted into the guide holes so that the slide cover is slid upward or downward on the front surface of
  - 10 the liquid crystal display of the main body; and
  - a side grip provided at a side surface of the main body so as to fix a position of the pop-up module or release a fixation of the pop-up module.
2. The mobile communication device as set forth in claim 1, wherein guide grooves are formed at both sides of the liquid crystal display of the main body in a
- 15 longitudinal direction of the liquid crystal display so as to guide both side surfaces of the slide cover.
3. The mobile communication device as set forth in claim 1, wherein the liquid crystal display of the main body serves as a main liquid crystal display when the slide cover is slid upward on the main body during use of the mobile communication device
- 20 so as to be completely opened to expose the entire of the liquid crystal display, and serves as a sub liquid crystal display when the slide cover is slid downward on the main body during nonuse of the mobile communication device so as to be partially opened to expose a portion of the liquid crystal display.
4. The mobile communication device as set forth in claim 1, wherein the slide
- 25 cover is slid upward on the main body during use of the mobile communication device so as to be completely opened to expose the entire of the liquid crystal display, and is slid downward on the main body during nonuse of the mobile communication device so as to be partially opened to expose a portion of the liquid crystal display.
5. The mobile communication device as set forth in claim 1, wherein the pop-up
- 30 module includes:

a head section connected to the slide cover;  
at least one bar installed at an end of the head section and inserted into the corresponding guide holes; and

a coiled compression spring being installed within the bar, and providing elastic  
5 force so that the bar is slid upward or downward.

6. The mobile communication device as set forth in claim 1, wherein the pop-up module is made of metal.

7. The mobile communication device as set forth in claim 5, wherein the head section includes a connection plate for connecting the bars to each other.

10 8. The mobile communication device as set forth in claim 5, wherein a flexible circuit is installed within one bar, the coiled compression spring is installed within the other bar, and a locking groove is formed in a lower end of the other bar.

9. The mobile communication device as set forth in claim 1, wherein the side grip includes:

15 a locking plate installed within the grip, and locked into or unlocked from a locking groove of a bar;

a one-touch button installed on an external surface of the side grip, and pressed by external force so as to rotate the locking plate in a clockwise or a counterclockwise direction, thus separating the locking plate from the locking groove; and

20 a locker unit installed at a designated position of the external surface of the side grip adjacent to the one-touch button so as to maintain a locked state of a protrusion of the locking plate into the locking groove.

10. The mobile communication device as set forth in claim 9, wherein an upper end of the locking plate contacts the one-touch button, and a lower end of the locking  
25 plate is provided with the protrusion so as to be locked into the locking groove.

11. The mobile communication device as set forth in claim 10, wherein the protrusion includes an incline plane serving to guide the locking groove when the protrusion is locked into the locking groove.

12. The mobile communication device as set forth in claim 10, wherein a plate spring is installed on a rear surface of the protrusion of the locking plate, and provides elastic force to the protrusion so as to rotate the locking plate.

5 13. The mobile communication device as set forth in claim 9, wherein a hinge unit is installed in a central portion of the locking plate so that the locking plate is rotated in a clockwise or a counterclockwise direction by pressing the one-touch button.

14. The mobile communication device as set forth in claim 9, wherein the locker unit includes:

10 a sliding button protruding from an external surface of the side grip, and being slid upward or downward by external force; and

a locking section being installed within the side grip integrally with the sliding button, and moving together with the upward or downward sliding motion of the sliding button so as to fix or release the locking plate.

15 15. The mobile communication device as set forth in claim 14, further comprising:

a contacting protrusion being installed at an upper end of the locking section, and contacting and fixing the locking plate according to the upward or downward sliding motion of the locking section; and

20 a stopper installed at a lower end of the locking section so as to stop the upward or downward sliding motion of the locking section.

16. The mobile communication device as set forth in claim 15, wherein the stopper includes:

a stopping protrusion connected to the locking section; and

25 at least one recess installed in a designated location of an inner wall of the side grip, and serving to accommodate the stopping protrusion so as to fix the locking section.

사건/파일 조회 Case / File Search

Receipt of Invention Disclosure ) General

사건 Case	(발명접수) 일반	일자 Date	2002/10/11
발신일 Sent Date	-	수신일 Received Date	
제목 Title	직무발명서 Invention Disclosure		
의견 Opinion			

파일명 Name of File	파일설명 Description of File
직무발명신고서	-

Invention Disclosure

닫기



## 직무발명신고

&lt;&lt;특허법 제39조 제40조 규정에 의거 직무와 관련된 본발명에 대해 등록받을 수 있는 권리를 회사에 양도합니다&gt;&gt;

■ 본 직무발명은 통신연구소 지적자산팀(수원/구미)으로 접수됩니다.

■ 발명명칭 POP UP MODULE을 이용한 BAR타입 휴대폰

■ 과제명 &lt;해당과제가 리스트에 없음&gt;

■ 과제코드 XXXXX

■ 제품명 MATRIX PHONE

■ 핵심기술(코드)명칭 )

## 기술적 내용의 평가

구분	평가내용						
발명구분	① 자체발명   산학협동   융역개발   공동개발						
계약서관리	[ 계약서 첨부 ]						
	파일명			파일설명			
	[ 소유권, 보상문제 기재 ]						
공표사실	공표예정일	2002/05/01		공표국가 및 단체	미국/다국적	공표방법	영화 개봉

## 발명자인적사항

No.	사외	이름	소속부서(기관)명	대표	지분(%)	영문성명	한자성명
			주민번호			주 소 (집)	
1		정상혁	기구개발그룹(우선)	①	100	JUNG SANG HYUCK	鄭相赫
			731115-1114214	경기 화성시 태안읍 병정리 817번지 신창미션힐 108동 501호			

## 직무발명신고파일

파일명	파일설명
특허2002.gul	POP-UP MODULE 이용한 BAR TYPE 휴대폰

## 발명등급판정

판정주체		판정일자	등급	의견
발명자	정상혁	2002/10/10	A급	기존과 다른 개념의 휴대폰 입니다.
부서장	송현명	2002/10/10	A급	마케팅용으로 전략적으로 개발하고 있는 모델임.
특허부서		2002/10/19	A급	-
평가위원회		2002/10/25	A급	-

## 직무발명 진행일자 관리

발명자상신일	2002/10/10	부서장승인일	2002/10/10	특허부서접수일	2002/10/11
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직무발명 접수번호 : GK-200210-035-1

직무발명(고안)명세서 (Invention Disclosure)		【사전체크 사항】			
● 발명의 명칭 (Title of Invention) ※ 발명(고안)의 내용을 표현할 수 있는 명칭을 간단 명료하게 기재		○선출원주의이므로 신속출원이 필요함 ○완성된 발명이어야 함			
국 문	POP UP MODULE을 이용한 BAR타입 휴대폰	- 실시예, Data등의 뒷받침이 필요 - 미완성 또는 화방사항 불가			
영 문	Bartype cellular phone using pop-up module	○출원전에 공표 금지 - 학회, 논문, 판매, 전시 금지			
● 관련 선행 기술 및 선출원		- 본 발명과 관련이 있는 기술이 이미 출원되어 있거나 현재 진행중인 것을 모두 기재함. - 국내우선권 주장이 목적이며, 최초 출원일로 부터 1년 이내에는 개량출원이 가능함.			
[기술출처] (해당 부분만 선택 기재)	유사 특허 또는 출원	출원/등록번호		출원/등록일자	
		발명의 명칭			
		출 원 인			
	배경 문헌 또는 제품	문헌명/제품모델명		발표자/제조사	
		발표/제조 년월일		페이지/기타	
	발명(고안)과 관련된 발명자 의 선출원	既 출원 건	발명의 명칭		
출원번호/일자			(19 . . .)		
진행중인 건		발명의 명칭			
		접수번호/일자	(19 . . .)		

## 1. 발명의 배경

## 가. 본 발명의 기술분야

본 발명은 BAR TYPE 휴대폰에서 POP-UP 모듈을 이용해 넓은 LCD창을 가려서 휴대하는 형태의 폰이다. 평상시에서 2라인 정도 OPEN되어 있어서 FOLDER TYPE의 듀얼 LCD 기능을 하다가 윈터치 버튼을 누르게 되면 POP-UP 모듈이 위로 올라가게 되면서 전면의 LCD가 다 보이는 구조이다.

지금까지의 휴대폰 형태와는 다른 구조형태로 새로운 가치를 창출할 수 있을 것이다.

또한 LCD를 외부 충격으로부터 보호할 수 있고 전류 또한 전체가 OPEN되어 있는것 보단 작게 소모할 수 있을 것이다.

## 나. 종래기술의 설명

기존의 BAR TYPE 전화기와 FLIP TYPE과는 상이함.

FLIP 타입은 KEYPAD를 덮는 타입이고 FOLDER 타입은 반으로 접는 타입이지만 POP-UP타입은 가려진 LCD를 모듈이 수직으로 이동하여 OPEN 시키는 타입임.

다. 종래기술 문제점 및 본 발명의 목적

- 종래기술의 문제점

기존의 방식과는 상이한 새로운 타입임.

- 본 발명의 목적

본 발명은 BAR TYPE 휴대폰에서 POP-UP 모듈을 이용해 넓은 LCD창을 가려서 휴대하는 형태의 폰이다. LCD를 외부 충격으로부터 보호할 수 있고 전류 또한 전체가 OPEN되어 있는것 보단 작게 소모할 수 있을 것이다.

평상시에서 2라인 정도 OPEN되어 있어서 FOLDER TYPE의 듀얼 LCD 기능을 하다가 원터치 버튼을 누르게 되면 POP-UP 모듈이 위로 올라가게 되면서 전면의 LCD가 다 보이는 구조이다.

지금까지의 휴대폰 형태와는 다른 구조형태로 새로운 가치를 창출할 수 있을 것이다.

## 2. 발명(고안)의 구체적 설명

### 가. 발명의 구성

1. POP-UP 모듈 (POP-UP HEAD, POP-UP BAR, SPRING)
2. FRONT COVER
3. SIDE GRIP (측면 BUTTON+ LOCKER)
4. REAR COVER

이 제품의 구성은 1번이 2번에 결합되어서 4번과 함께 조립된다. 그리고 3번을 마지막으로 조립한다.

#### 나. 발명의 동작설명

1. POP-UP MODULE (POP-UP HEAD, POP-UP BAR, SPRING)
2. FRONT COVER
3. SIDE GRIP (측면 BUTTON+ LOCKER)
4. REAR COVER

이 제품은 1번이 수직으로 상하운동을 하게끔 고안되어 있다.

스프링과 POP-UP MODULE에 의해 상하운동을 한다.

제품을 위에서 누르면 스프링이 압축되면서 POP-UP MODULE이 LCD를 가리고 POP-UP BAR가 SIDE GRIP의 LOCKER에 걸려서 닫혀 있는 상태가 된다.

그리고 SIDE 버튼을 누르면 POP-UP BAR가 LOCKER에서 해제되면서 수직 방향으로 올라가서 LCD가 OPEN 되는 형태이다.

#### 다. 발명의 효과

본 발명은 BAR TYPE 휴대폰에서 POP-UP 모듈을 이용해 넓은 LCD창을 가려서 휴대하는 형태의 폰이다. LCD를 외부 충격으로부터 보호할 수 있고 전류 또한 전체가 OPEN되어 있는 것 보단 작게 소모할 수 있을 것이다.

평상시에서 2라인 정도 OPEN되어 있어서 FOLDER TYPE의 듀얼 LCD 기능을 하다가 원터치 버튼을 누르게 되면 POP-UP 모듈이 위로 올라가게 되면서 전면의 LCD가 다 보이는 구조이다.

지금까지의 휴대폰 형태와는 다른 구조형태로 새로운 가치를 창출할 수 있을 것이다.

디자인적으로 기존 모델과 상당한 차별화를 구현할 수 있다.

#### 3. 권리청구의 범위



○ 특허발명과 기술범위를 결정하는 매우 중요한 항목임 (※ 설명부분이 필요없을시 삭제가능)

- 독점권을 얻고있는 특정사항만을 기술한다.
- 본 발명의 특징과 같은 효과를 얻기위해서 필요한 신규의 구성요소를 기술한다.

【 기재 예 】

1. 상위개념(독립항)

- XXX기능을 하는 A와 YYY기능을 하는 B로 구성된 ○○장치(회로)
- A단계와 B단계와 C단계로 이루어지는 ○○방법

2. 하위개념(종속항)

- 제1항(독립항인용)에 있어서 동신호, 검출부(수단)는 --하는 --와, --하는 --로 구성된 ○○장치(회로)
- 제1항(독립항인용)에 있어서 A단계의 접속이 ○○인 ○○방법

3. 상위개념(독립항)

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1. 휴대폰에서 POP UP MODULE을 이용해 닫혀진 LCD를 OPEN 시키는 구조

-one touch 자동 pop up 방식

2. 1개의 LCD를 이용하여 2가지 기능(FOLDER TYPE의 듀얼 LCD )을 구현하는 구조

3. 휴대폰에서 POP UP MODULE이 상하 수직 이동뿐만 아니라 모듈의 축을 상단으로 올리면 BAR TYPE은 유지하면서 LCD개폐는 FOLDER TYPE형태로(150-180도) 회전하는 TYPE 구현.

4. 도 면

1. 발명의 특징을 가장 잘 나타낼 수 있는 것을 대표도로 하며, 발명의 구체적 설명에서 인용할 부호와 도면 상의 부호를 일치시켜 기입한다.
2. 도면에 대한 간단한 설명을 도면아래 기입한다. (※ 설명부분이 필요없을시 삭제가능)

가. 종래기술의 도면



# Invention disclosure

<<Rights, which can be registered with respect to the present invention relating to the jobs of employees, are granted to an employees' corporation under the regulation of articles 39 and 40 of the patent law >>.

The present employee invention is received to the intellectual property team of the telecommunication institute (Suwon city and Gumi city).

Title of the present invention : "BAR-TYPE CELLULAR PHONE USING POP UP MODULE"

## Evaluation of technical contents

Items	Evaluated Contents							
Type of Invention	<input type="checkbox"/> individual invention <input type="checkbox"/> industry-university cooperation <input type="checkbox"/> outside development <input type="checkbox"/> corporative development							
Contract Management	[Contract Attachment] <table border="1" style="width:100%"> <tr> <td style="width:50%">The name of File</td><td style="width:50%">The description of File</td></tr> </table> [inscription of a property right and description about compensation problems]						The name of File	The description of File
The name of File	The description of File							
Disclosed Particulars	Due date of disclosure	2002/05/01	Disclosed country and organization	U.S./ Multination	Disclosure type	Releasing a new film		

## Identification of inventors

Inventor's name	Inventor's Resident Number	Representative	Inventor's address
JUNG Sang Hyuck	731115-*****	representative	108-501, Sinchangmisyeonhil, 817, Byeongjeom-ri, Taeon-eup, Hwaseong-si, Gyeonggi-do, Republic of Korea

## File of employee invention report

Name of File	Description of File
Patent2002. gul	A bar-type cellular phone using a pop-up module

## Judgment of invention grade

Subjects of Judgment		Date of Judgment	Grade	Opinion
Inventor	JUNG Sang Hyuck	2002/10/10	A	A cellular phone of a different concept from the existing

				cellular phones
Chief of inventor	SONG Hyeon Myeong	2002/10/10/	A	Model being developed in strategy for use in Marketing
Patent Team		2002/10/19	A	
Evaluation committee		2002/10/25	A	

Dates regarding employee invention

Date of Inventor Report	2002/10/10	Approval Date of Team Leader	2002/10/10	Receipt Date of Patent Team	2002/10/11
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Receipt number of employee invention : GK200210-035-1

<b>Employee Invention Report (Invention Disclosure)</b>  <input type="checkbox"/> Title of Invention * Simple & clear title capable of expressing the content of the invention		[Points to be pre-checked] <input type="checkbox"/> prompt application is necessary under the first-to-file system <input type="checkbox"/> complete invention is necessary - the invention must be backed up by embodiments, data, etc. - incomplete or only desired idea is not available <input type="checkbox"/> publication before application is prohibited - academy presentation, paper publication, sale, display, etc. are prohibited			
Korean	BAR type cellular phone using a pop-up module				
English	BAR type cellular phone using pop-up module				
Related prior art & prior application		- all technologies in relation to the present invention, which have already been filed or are currently pending - improvement application can be filed within one year from the first application data, with domestic priority claiming			
[Technology Source] (optionally fill only corresponding blanks)	Similar patent or application	Application/registration No.		Application/registration Date	
		Title of Invention			
		Applicant			
	Background document or product	Document name/product model name		Publisher/manufacturer	
		Publication/production date		Page/others	

	Prior application(s) of the inventor(s) related to the invention	Filed application(s)	Title of invention	
			Application no./date	(19 ...)
		Pending application(s)	Title of invention	
			Receipt no./date	(19 ...)

## 1. BACKGROUND OF INVENTION

### A. FIELD OF INVENTION

The present invention relates to a bar type portable phone which has a pop-up  
5 module and a wide LCD window covered by the pop-up module when it is kept  
while being unused. At an initial state, only two lines of the LCD screen of the  
portable phone are opened, so that the LCD functions as one of dual LCDs of a  
folder type mobile phone. When a one-touch button is pressed, the pop-up  
module is moved up, so as to uncover all of the LCD screen at the front surface  
10 of the mobile phone.

The mobile phone of the present invention has a structure different from the  
structure of the existing mobile phones, which can produce new values.

Further, the present invention can protect an LCD of a mobile phone from  
external impact and can reduce the power consumption in comparison with a  
15 conventional mobile phone having an entirely open LCD screen.

### B. DESCRIPTION OF PRIOR ART

The mobile phone of the present invention is different from the existing bar type  
mobile phones and flip type mobile phones.

20 The flip type mobile phone has a flip covering the keypad, and the folder type  
mobile phone has two half bodies which are foldable onto each other.

However, in the pop-up type mobile phone according to the present invention, a  
module moves vertically upward so as to open a covered LCD screen.

### 25 C. PROBLEMS OF THE PRIOR ART & OBJECTS OF THE INVENTION

#### - PROBLEMS OF THE PRIOR ART

The present invention proposes a new type mobile phone different from the  
conventional mobile phones.

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## - OBJECTS OF THE INVENTION

The object of the present invention is to provide a bar type mobile phone which includes a pop-up module and a wide LCD window covered by the pop-up module when it is kept while being unused. Another object of the present invention is to protect an LCD of a mobile phone from external impact and to reduce the power consumption in comparison with a conventional mobile phone having an entirely open LCD screen.

At an initial state, only two lines of the LCD screen of the portable phone are opened, so that the LCD functions as one of dual LCDs of a folder type mobile phone. When a one-touch button is pressed, the pop-up module is moved up, so as to uncover all of the LCD screen at the front surface of the mobile phone.

Still another object of the present invention is to provide a mobile phone having a structure different from the structure of the existing mobile phones, which can produce new values.

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## 2. DETAILED DESCRIPTION OF THE INVENTION

### A. CONSTRUCTION OF THE INVENTION

1. pop-up module (pop-up head, pop-up bar, spring)
- 20 2. front cover
3. side grip (side button + locker)
4. rear cover

When this product is manufactured, element 1 is first assembled with element 2. Then, the element 1 and element 2 assembled with each other are assembled with element 4. Finally, the assembled elements 1, 2, and 4 are assembled with element 3.

### B. OPERATION OF THE INVENTION

- 30 1. pop-up module (pop-up head, pop-up bar, spring)

2. front cover

3. side grip (side button + locker)

4. rear cover

In this product, element 1 is designed to vertically move up and down. The  
5 vertical up-and-down movement is carried out by the interaction between the  
spring and the pop-up module.

When the product is pressed from the above, the pop-up module moves to cover  
the LCD screen while compressing the spring, until the pop-up bar is engaged  
with the locker of the side grip to hold the pop-up module.

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### C. EFFECTS OF THE INVENTION

The bar type portable phone of the present invention has a pop-up module and a  
wide LCD window covered by the pop-up module when it is kept while being  
unused. The present invention can protect an LCD of a mobile phone from  
15 external impact and can reduce the power consumption in comparison with a  
conventional mobile phone having an entirely open LCD screen.

At an initial state, only two lines of the LCD screen of the portable phone are  
opened, so that the LCD functions as one of dual LCDs of a folder type mobile  
phone. When a one-touch button is pressed, the pop-up module is moved up, so  
20 as to uncover all of the LCD screen at the front surface of the mobile phone.

The mobile phone of the present invention has a structure different from the  
structure of the existing mobile phones, which can produce new values.

In view of the design, the present invention can show a considerable difference  
from the existing models.

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### 3. CLAIMS

- |   |
|---|
| <p><input type="checkbox"/> Very important Item which determines the invention and its scope (*omissible when the description part is unnecessary)</p> <p>- mention only characteristic matters which are desired to be protected by an exclusive right</p> <p>- mention novel elements necessary to have the same effect as the characteristics of the invention</p> |
|---|

[Examples]

1. Superordinate Concept (Independent Claim)

- □□ device (circuit ) comprising A for performing an XXX function and B for performing a YYY function.
- □□ method comprising an A step and a B step.

2. Subordinate Concept (Dependent Claim)

- The device (circuit) of claim 1 (citing the independent claim), wherein the detection unit (means) comprises ... for ....., and .... for .....
- The method of claim 1 (citing the independent claim), wherein the connection in step A is .....

3. Superordinate Concept (Independent Claim)

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1. A structure for opening a closed LCD screen by using a pop-up module in a mobile phone.

- one touch automatic pop-up method

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2. A structure for implementing two functions (dual LCD of a folder type mobile phone) by using a single LCD.

3. A structure for a mobile phone, in which a pop-up module not only moves  
10 vertically up and down, but can also rotate (150 – 180 degrees) around an axis of  
the module to open/close the LCD like a folder type mobile phone while  
maintaining the bar type structure.

4. Drawings

1. A view which can best express the characteristics of the invention shall be selected as a representative drawing, and the same reference numerals as those in the detailed description of the invention shall be marked in the drawings
2. Brief description of the drawings shall be attached under the drawings (\* omissible when the description is unnecessary)

15



## A. DRAWINGS OF THE PRIOR ART



1/11

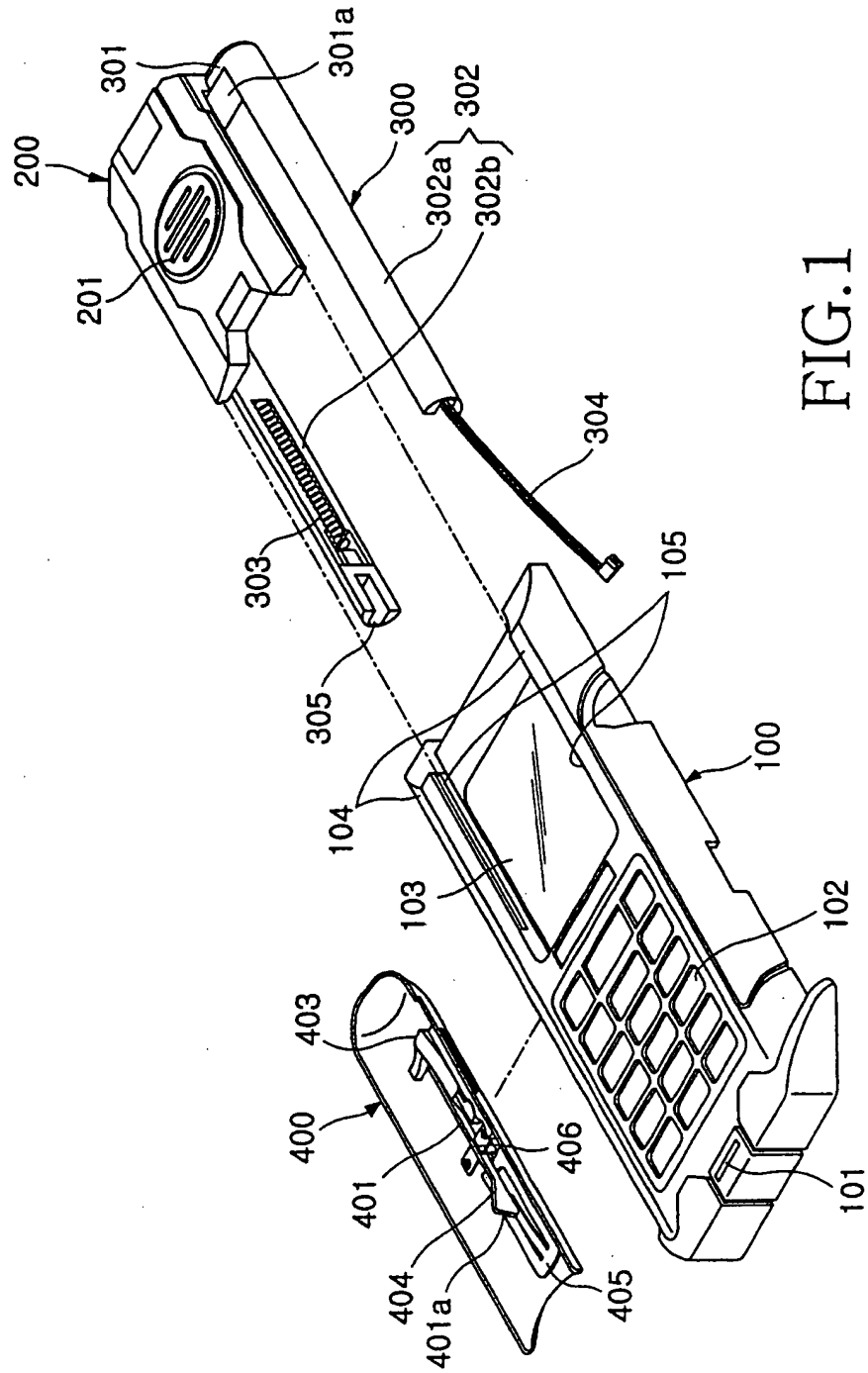


FIG. 1

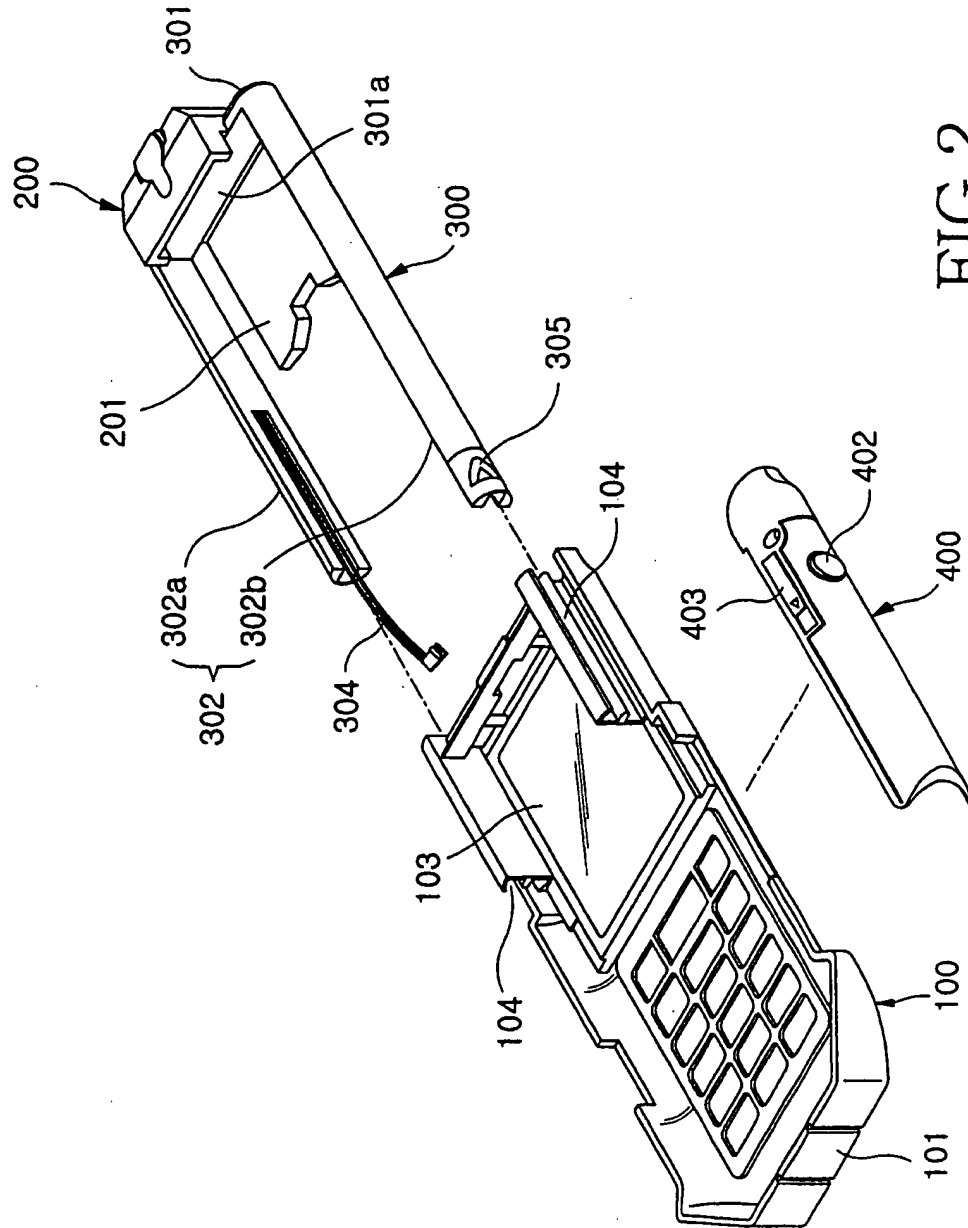


FIG.2

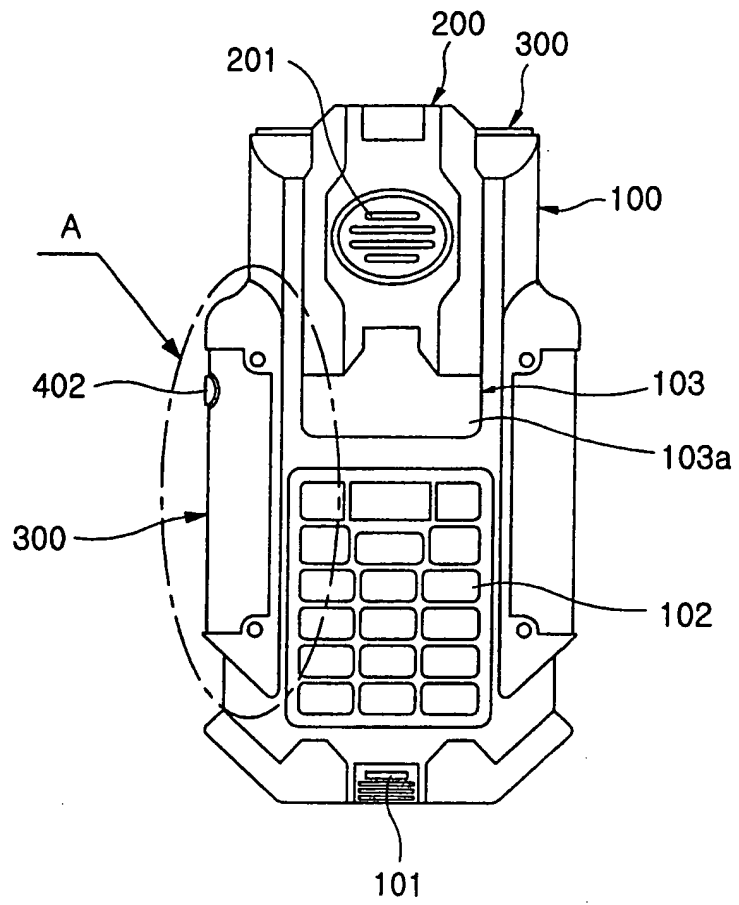


FIG.3

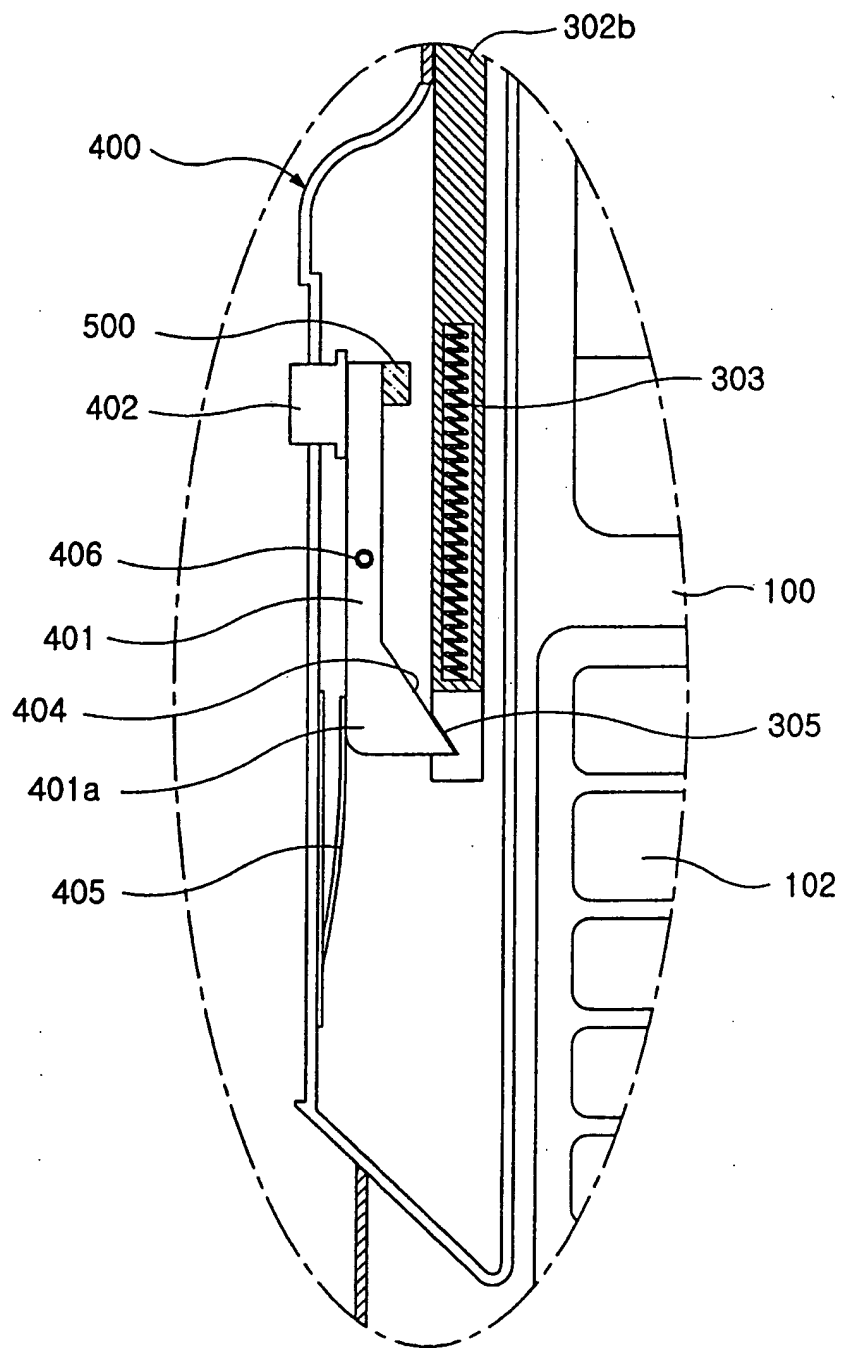


FIG.4

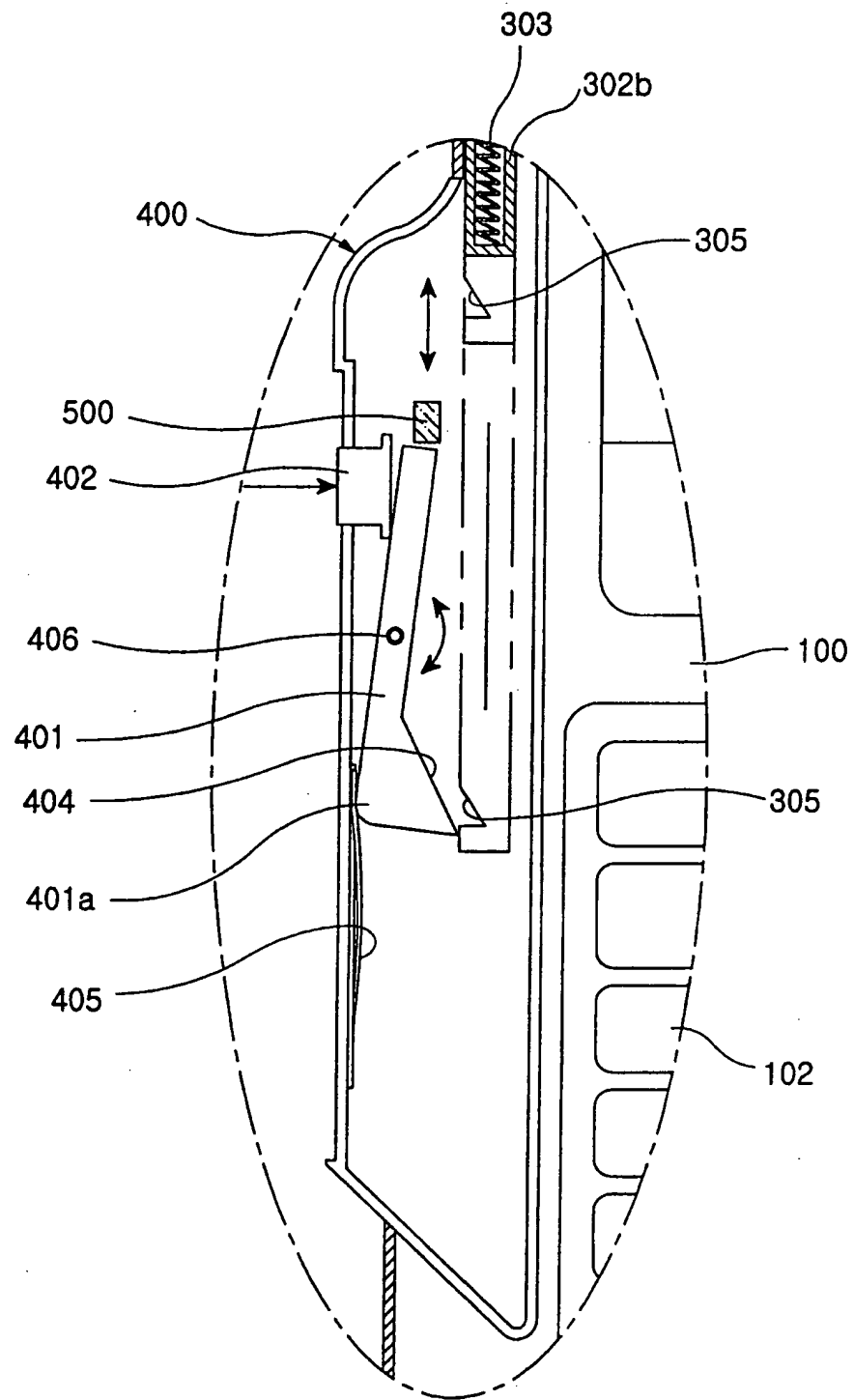


FIG.5

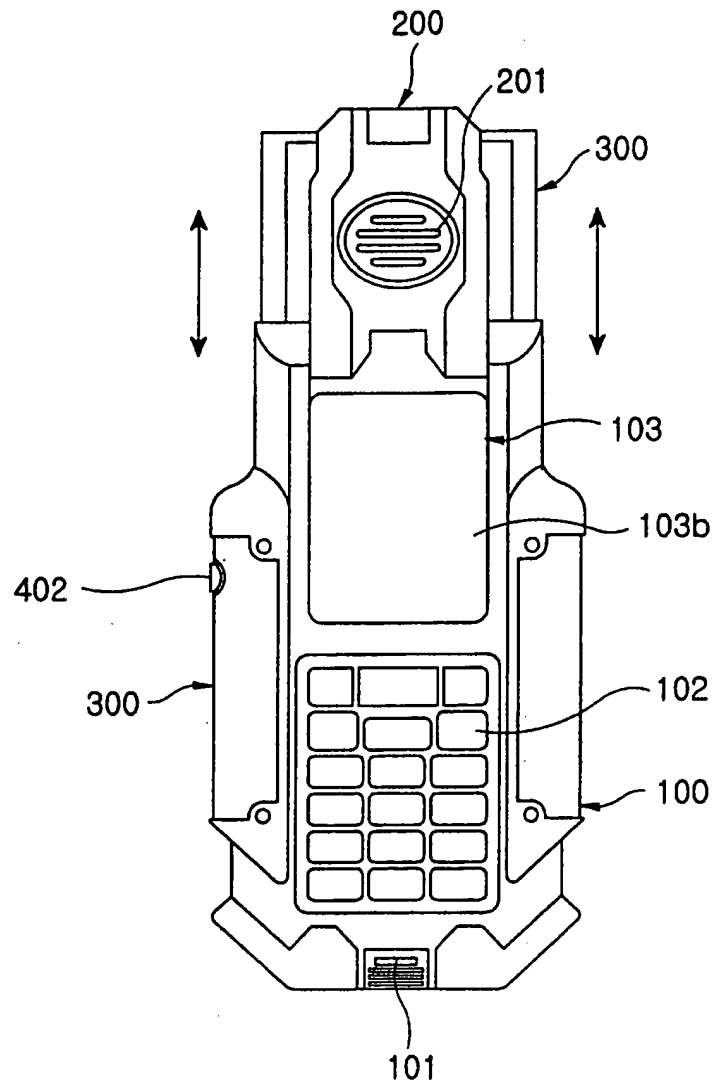


FIG.6

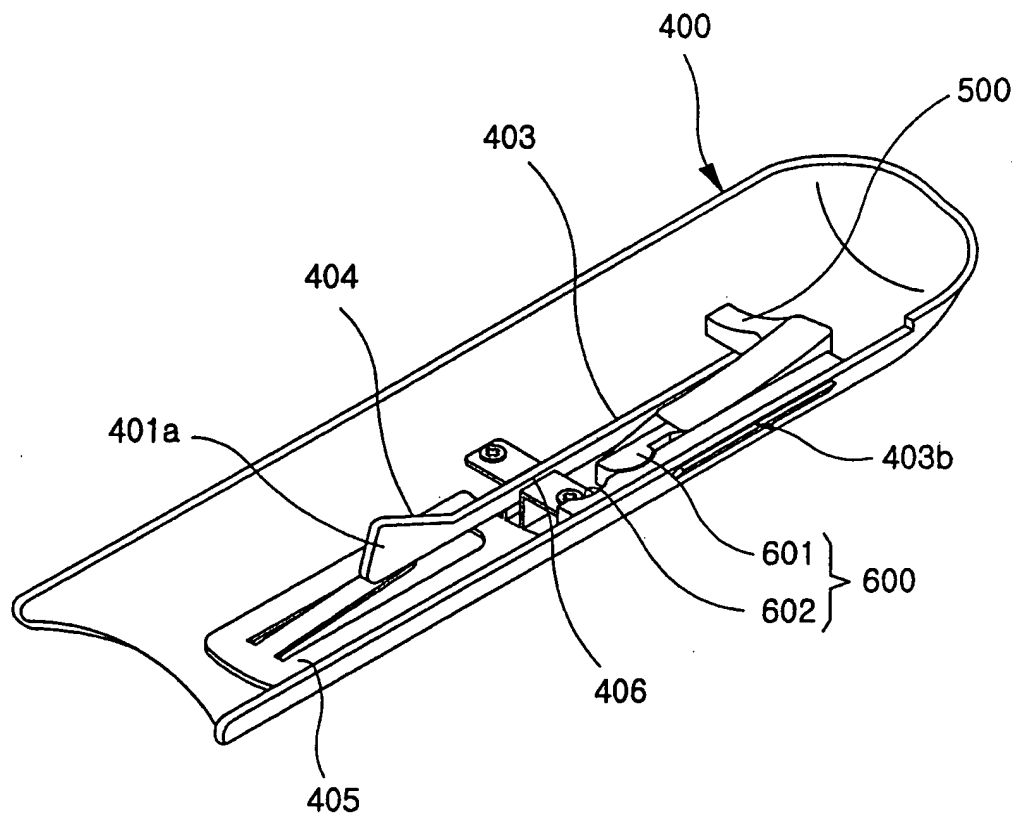


FIG. 7



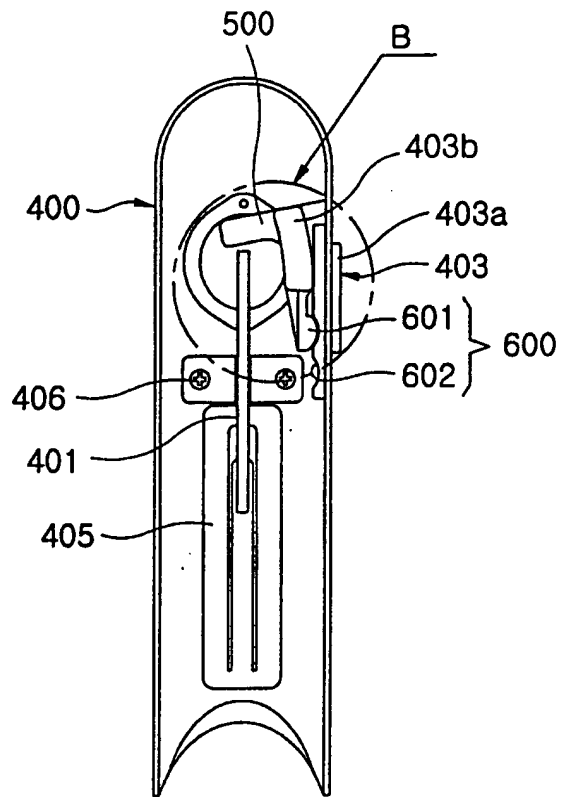


FIG.8

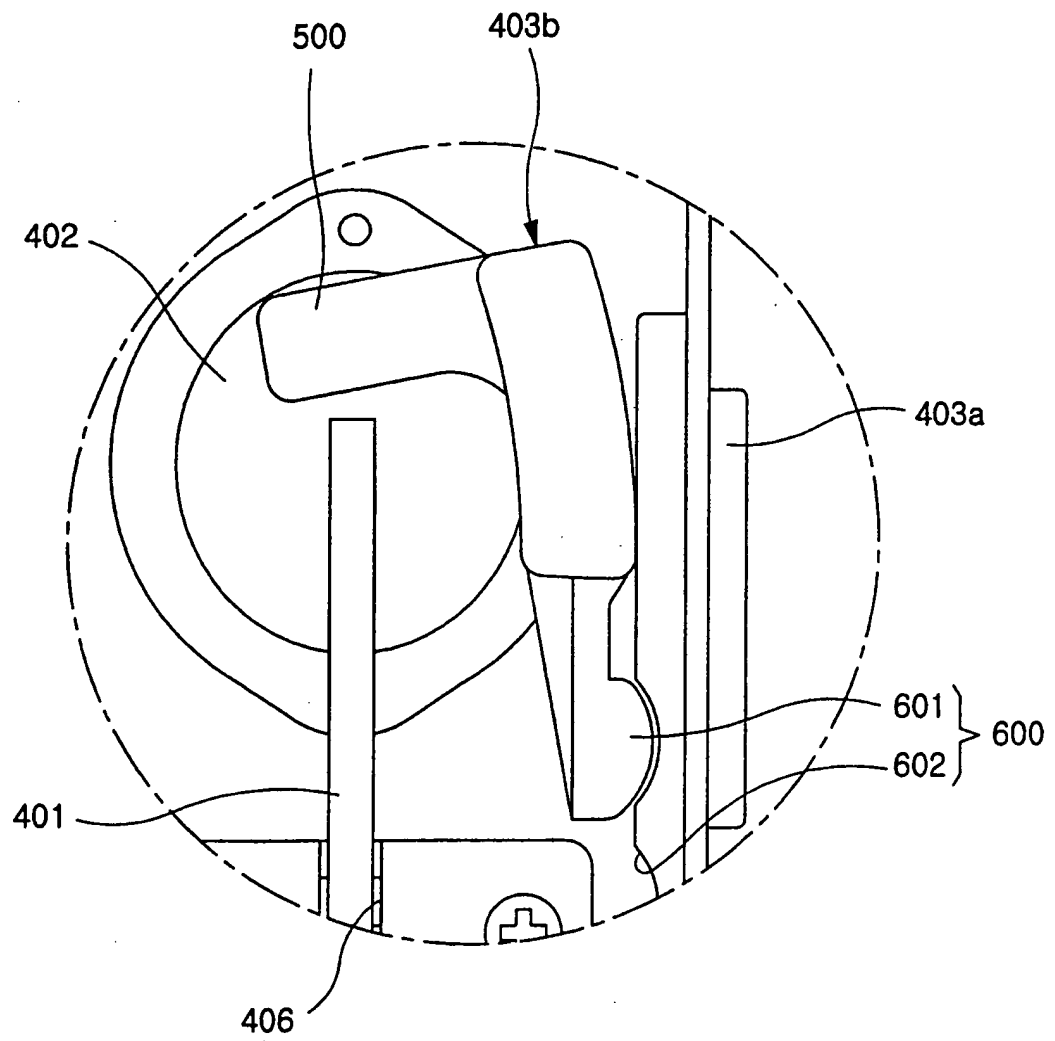


FIG. 9

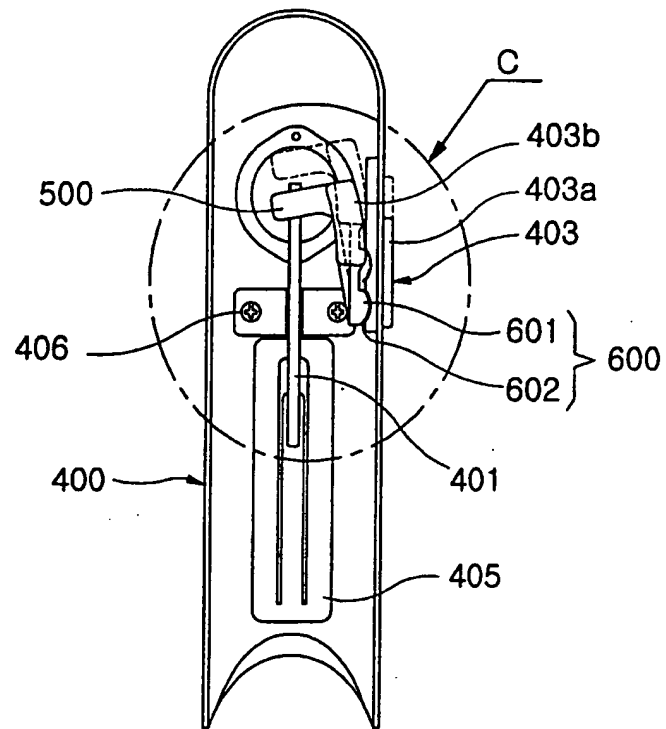


FIG.10

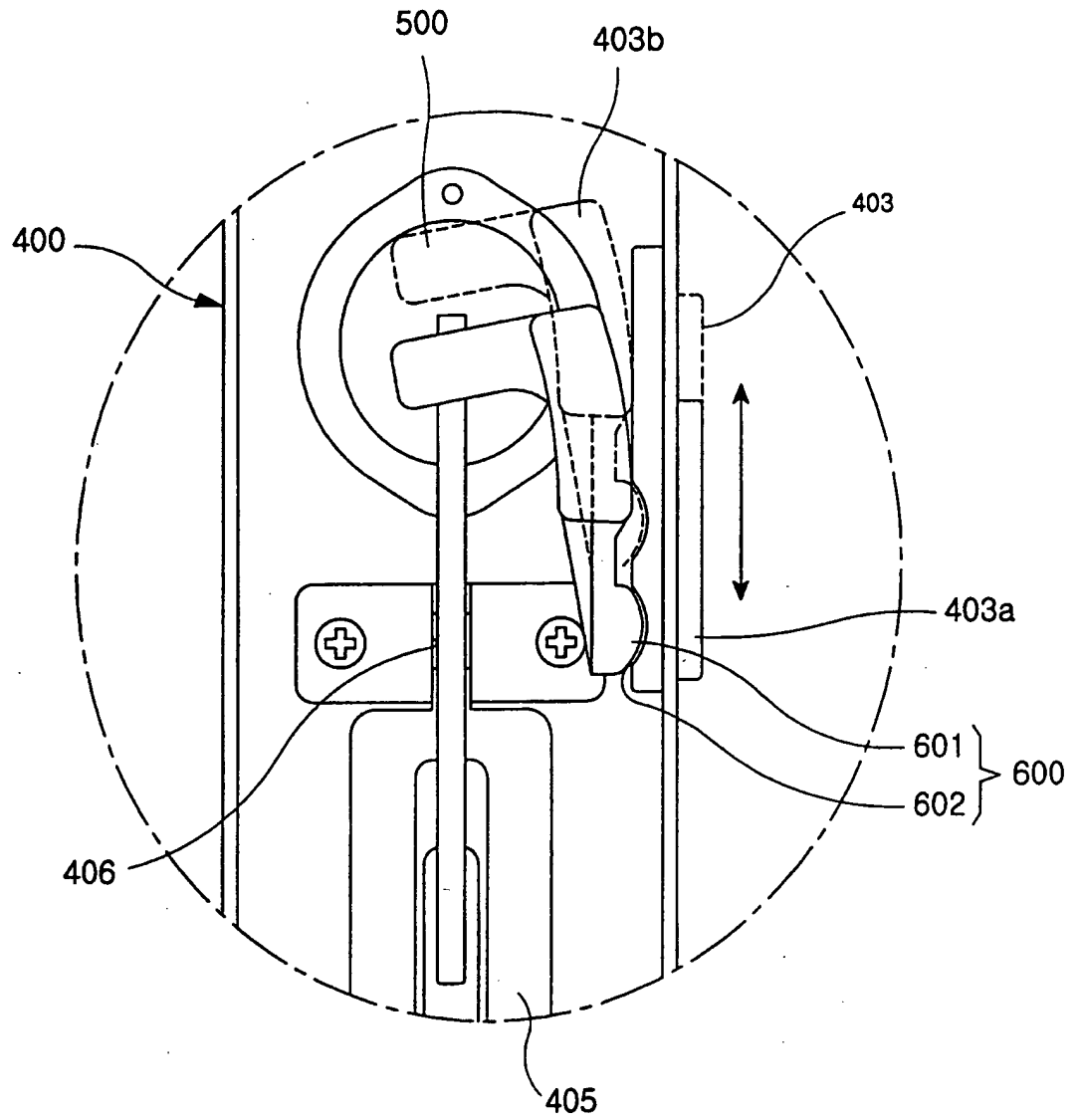


FIG.11